NORTH CAROLINA

DIGITAL LEARNING PLAN

Preliminary Recommendations to Inform State Policy Decisions

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Prepared by the Friday Institute for Educational Innovation

THE WILLIAM & IDA FRIDAY INSTITUTE FOR EDUCATIONAL INNOVATION

NC STATE UNIVERSITY College of Education

REVIEW FROM POLICY BRIEF 1: ELEMENTS OF THE K-12 DIGITAL LEARNING TRANSITION

Our work will be informed by K-12 digital learning transitions already underway in schools and districts across North Carolina and beyond, with the ***North Carolina Digital Learning Plan*** designed to support and enhance local initiatives. While schools and districts are taking different approaches and moving at different paces in this transition, a number of common themes have emerged that help clarify what this change to *digital-age* education looks like for our students, parents, educators and schools.

Traditional Instructional Model	Digital-Age Learning Model
Advancement based primarily on time spent in class.	Advancement based on demonstrated **mastery** of the content and **competency** in applying what has been learned.
Fixed places and times for learning within school buildings.	**Anywhere and anytime learning,** inside and outside of schools, 24/7, with most learning blending face-to-face and online activities.
One-size-fits-all instruction and instructional resources.	**Personalized learning** and flexible resources optimized for each student.
Teacher-centered instruction, with teachers as expert disseminators of content to classes of students.	**Student-centered instruction,** combining large group, small group and individualized learning, with teachers serving as facilitators and coaches.
Printed, static text, often out-of-date, as the dominant content medium for educational resources.	**Digital content** providing interactive, flexible and easily updated educational resources.
End-of-course standardized assessments of learning, primarily for accountability.	**Assessments integrated into learning activities** to provide ongoing information about students' achievement that can be used to improve teaching and learning.
Limited information available to parents via periodic report cards and teacher meetings.	**Parent portals** provide 24/7 access to their children's assignments, grades, and records, as well as a means to communicate with teachers and administrators.
Academics addressed in isolation, with schooling separated from informal learning experiences outside of school.	**Project-based** and community-based learning activities connecting to students' lives outside of school.

OVERVIEW

The Friday Institute for Educational Innovation at North Carolina State University[1] is developing the *North Carolina Digital Learning Plan* to accelerate the State's progress in providing the personalized, digital-age education that K-12 students need to be successful in college, in careers, and as engaged citizens. The first *North Carolina Digital Learning Plan Policy Brief* from June 2014[2] summarizes the key elements of digital-age learning and describes the scope of the *Plan*:

> *The transition to a digital-age education system that fully harnesses the power of modern technologies will impact all aspects of education, including the content students learn, the methods teachers use, where and when learning takes place, what resources are required, and how success is defined and measured.*

The recommendations provided in this *Brief* are intended to inform near-term actions by State policymakers to jump-start the statewide transition to digital learning, including recommendations for funding considerations during the 2015 legislative session. The recommendations are ambitious, aiming to quickly build the statewide technology infrastructure, exemplary implementation models, leadership capacity, and support structures necessary for a successful transition to digital learning in all K-12 public schools throughout the State. The recommendations build upon analyses of relevant data and input from many stakeholders, including deep-dive visits to selected districts to gather information about their current status, goals, assets, and needs related to digital learning. The preliminary recommendations are informed by the following initial findings from our work:

1. Digital learning innovations are driven at the district level and will take different forms and proceed at different paces across districts. Different districts will need varying levels of guidance and support provided by State and regional organizations.
2. The roles of the State are to:
   - ✓ provide statewide infrastructure and resources;
   - ✓ leverage federal funding and economies of scale through statewide procurement;
   - ✓ provide models, guidance, and capacity-building programs to districts and regional support organizations; and
   - ✓ ensure equity of digital learning opportunities for all students.
3. Investments in infrastructure, digital content, and educator capacity development will be required. These will yield long-term returns on investments in terms of educational outcomes, increased graduation rates, and college and career readiness.

Future deliverables, including the *Feasibility Study and Assessment Report* and the final *Digital Learning Plan*, will contain additional legislative, policy, and programmatic recommendations through FY 2020, with detailed plans for the technology infrastructure, educator capacity, digital content, and support structures required for long-term success.

[1] The Friday Institute has ongoing involvement in multiple initiatives related to the *Digital Learning Plan*, with funding from the North Carolina Department of Public Instruction (NCDPI), the Golden LEAF Foundation, local education agencies (LEAs), and others; these include leading the School Connectivity and Education Cloud initiatives, partnering with NCPAPA on a professional learning program for principals, providing technical assistance and professional development to Golden LEAF grantees and other schools and districts, providing professional development about digital learning for NCDPI staff, and conducting evaluations of Race to the Top initiatives, NCVPS, and other programs.

[2] http://ncdlplan.fi.ncsu.edu/

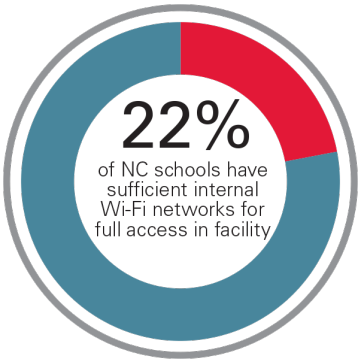
The recommendations are organized into categories that reflect components of the emerging *Digital Learning Plan*:

The recommendations are described briefly below and summarized in a final table. The Friday Institute is prepared to provide more details and to discuss modifications for each recommendation to help inform policy and funding decisions.

I. TECHNOLOGY INFRASTRUCTURE

Digital learning requires that all teachers and students have ready access to digital devices and reliable wireless connectivity. The following recommendations focus on extending the State's role in putting into place the networking infrastructure required to provide equitable connectivity to all K-12 public schools. Further recommendations about providing devices to all students and teachers will be addressed in the final *Digital Learning Plan*.

North Carolina already has made substantial progress in the area of technology infrastructure through the School Connectivity Initiative (SCI). SCI provides $19.9 million in annual appropriated State funds, which has leveraged $30 million annually in federal E-Rate funds. With this funding, North Carolina has successfully brought broadband connectivity to all K-12 public school buildings in the State; however, only 22% of the schools have sufficient internal Wi-Fi networks to provide the access needed throughout the building. That is, the situation in 78% of our schools is comparable to having electrical lines running to the building without sufficient internal wiring to power adequate lighting in all the rooms.[3]



Previously, E-Rate did not help address the internal networking needs in most schools. However, the modernized Federal Communications Commission (FCC) E-Rate program, announced in July 2014, extends the federal program to cover internal Wi-Fi connections in all public schools. By capitalizing on this program, North Carolina can provide equitable Internet access throughout all K-12 public schools and sustain and update existing networks, with State funds required for only a fraction of the total cost.

To move forward on providing all K-12 public schools with the networking infrastructure that is a critical foundation for the transition to a digital-age education system, we recommend the following to North Carolina's policymakers:

1. **Expand the School Connectivity Initiative to support internal Wi-Fi infrastructure.** This will require continuing the $20 million recurring annual funding to support high-speed Internet connectivity to school buildings and also will require adding $12 million annually for internal Wi-FI networks and supporting services. This $32 million total annual investment from the

[3] The detailed results from the May 2013 survey conducted by the Friday Institute are available at http://cloud.fi.ncsu.edu/status/Wireless%20Survey%20Findings.pdf

State will leverage approximately $62 million of E-Rate funding annually and provide up-to-date and sustainable networking for Internet access in all classrooms and workspaces in all K-12 public schools throughout North Carolina. The State contribution amounts to about $20 per student and staff, or about $12,700 per school,[4] to provide the access required for the full use of digital tools and resources.

As part of our work on the *Digital Learning Plan*, the Friday Institute has collected the necessary information from the State's local education agencies (LEAs) and completed the required analyses of schools' current networking statuses and needs to position North Carolina to move forward quickly in order to obtain and optimize the use of the E-Rate funds. In addition, North Carolina has received approval from the U.S. Department of Education to apply $5 million of Race to the Top funding to the State's share of the Wi-Fi costs, thereby reducing the State funds required for the first year.

2. **Establish a collaborative procurement service.** This service would function as a public school buyers' consortium for technology infrastructure, devices, content, and professional services, in order to capitalize on economies of scale and reduce burdens on individual LEAs. The procurement and contracting operations of the textbook warehouse provide an initial model for this service, with adaptations required for the transition to the purchasing necessary to support digital learning and to comply with FCC E-Rate regulations. We recommend that, during 2015-16, the State Board of Education oversee a study to develop a sustainable operating model for this collaborative procurement service.

3. **Support a multi-agency planning process for addressing broadband access in rural communities.** To begin to address the issue of equity of home access, we recommend leveraging the newly-formed North Carolina Connect initiative[5] in the Office of the State Chief Information Officer to engage multiple State agencies in the development of a plan to provide broadband Internet access to all homes and community organizations in rural areas. While this effort is essential for K-12 education, it is also essential to provide citizens access to online learning from the State's community colleges and universities, as well as access to other government resources and services.

II. MODEL DIGITAL LEARNING INNOVATIONS

North Carolina used competitive grants effectively to support schools' and LEAs' development of innovative digital learning approaches from 2003 to 2013.[6] In addition, many LEAs have initiated digital learning programs, aligned to local needs, with support from the Golden LEAF Foundation and other funders. Most recently, a Digital Learning Fund (PRC 30) was established in the 2013-2015 biennium budget for grants to LEAs to enhance instruction via professional learning opportunities focused on using digital technologies and acquiring quality digital content. However, this funding was discontinued for the 2014-15 school year.

The transition to digital-age education statewide can be accelerated by support for local digital learning innovations that develop, demonstrate, and disseminate exemplary practices that will inform future local and State digital learning decisions. Therefore, we recommend the following:

[4] Based on NCDPI Facts and Figures 2012-2013 (http://www.ncpublicschools.org/docs/fbs/resources/data/factsfigures/2012-13figures.pdf), which shows 1,443,998 students, 177,149 full-time personnel, and 2,526 schools.
[5] http://ncbroadband.gov/about/nc-connect
[6] http://www.ncwiseowl.org/impact/

1. **Establish a grant program to support the development and dissemination of innovative district digital learning models.** This program should support grants to districts for the development of innovative initiatives that exemplify elements of the digital-age learning model described in the prior *Policy Brief* (e.g., competency-based learning, personalized learning, anywhere anytime learning, assessments integrated into learning activities), along with innovative models of professional development, partnerships, strategic staffing, equity of access, and other exemplary approaches relevant to digital learning. Grant recipients should be able to request waivers of State policies that create barriers to their planned innovations. Recipients must agree to: (a) evaluate, document, and disseminate their approaches and results; (b) host visits by teams from other districts; (c) support partner districts in planning and implementing digital learning; and (d) share what they have learned during regional or State summits on digital learning.

   We recommend that grants be awarded for a two-year period and range from $500,000 to $1.5 million per recipient (depending upon district size), with grant review criteria that encourage collaborations across districts, with charter schools, and with community colleges, universities, and other partners. A grant review committee should be convened by the North Carolina Department of Public Instruction (NCDPI) with representation from districts, institutions of higher education, and the private sector. We recommend $48 million of funding for this program over the two years of the biennial budget, with flexibility to allow grantees to continue use of the funding into a third year.

III. LOCAL EDUCATOR LEADERSHIP CAPACITY

The transition to digital learning requires that the State's K-12 education workforce—both teachers and administrators—update their knowledge and skills to lead, plan, manage, teach, evaluate, and communicate in digitally-aware ways. This process already is underway in North Carolina, but needs to be continued and expanded. For example, on the 2014 North Carolina Teacher Working Conditions survey, which was completed by 89% of the State's K-12 teachers, less than 30% of teachers in most LEAs reported that they had sufficient training to fully utilize instructional technology.[7]

Extensive research—in North Carolina and nationally—demonstrates that successful strategies for developing capacity for digital learning include:

- Professional learning that is embedded in the day-to-day work of educators, directly connected to their professional practices, personalized to meet their individual needs, and supported by local peer learning communities;
- District and school leaders who are prepared to foster these innovations and support this professional learning; and
- School-based digital learning coaches who can offer day-to-day, on-site support to teachers as they learn to incorporate new approaches and tools into their teaching.

[7] http://www.ncteachingconditions.org

Based on the State's needs, and on research on effective ways to address those needs, we recommend that the State:

1. **Support professional learning for educators who will lead digital learning initiatives and coach teachers.** This funding should continue established programs that have documented success and provide competitive grant opportunities for new initiatives—including public-private partnerships, regional consortia, district-university collaborations, and other models for addressing education workforce development needs. The funding should initially be focused on professional learning opportunities for district and school leaders and for personnel who work directly with teachers to support classroom implementation of digital learning; then, as these personnel become prepared to lead and support digital learning initiatives, the resources should be moved to preparing teachers. We recommend that $5 million—less than $50 per educator—be allocated annually to prepare the K-12 education workforce for the transition to digital learning.

IV. HIGH-QUALITY DIGITAL EDUCATION RESOURCES

Digital learning requires very different tools and resources than traditional learning. Curriculum resources are no longer static pages, but instead are interactive, multimedia learning experiences, in which formative assessments and alternative paths to learning can be embedded. Digital education resources are available from a variety of sources, and include products from commercial publishers, open education resources (OER) developed by numerous educators and organizations, and resources developed or compiled by teams from schools, districts, colleges, universities, and other organizations throughout the State. While a large number of digital resources already are available and many more are being developed, evaluating these multifaceted, hyperlinked, ever-changing digital resources is more complex than evaluating static, unchanging textbooks. To harness this vast array of resources, educators need systems to help them identify, evaluate, organize, modify, and distribute these resources, along with systems to provide the resources to their students, monitor students' work, and evaluate students' progress.

Supporting digital learning statewide requires that students, teachers, and administrators have access to online systems that address a variety of needs. Home Base is the set of systems designed to support digital teaching and learning in North Carolina's K-12 schools; it includes the PowerSchool student information system, Schoolnet student assessment system (which also enables educators to select and organize curriculum resources), OpenClass learning management system for providing online learning resources and interactions to students, and Truenorthlogic system to support the educator evaluation process and professional development. In addition, the State's Learning Objects Repository is used to collect and distribute curriculum resources, and NCTest provides the secure system needed for high-stakes testing. The State also licenses commercial educational content, and NCDPI staff select and vet online content to be made available through Home Base.

The initial implementation of Home Base yielded important lessons about its strengths and limitations for supporting the needs of North Carolina educators, parents, and students. Based upon lessons learned so far, we recommend that the State move forward as quickly as possible on the following:

1. **Continue to support Home Base while improving the curriculum and learning management components.** Home Base is successfully serving important functions, and its use will expand as educators become more familiar with its capabilities and certain technical issues are resolved; however, educators widely report that the curriculum and learning management components do not meet their needs as well as other existing systems. As a result, most districts have chosen to use other Learning Management Systems (LMS) rather

than the one that is provided in Home Base. In addition, the State is about to complete the procurement process for an Education Cloud LMS, which will be used for all the North Carolina Virtual Public School courses. This LMS will have more of the functions desired by North Carolina educators and will support course and classroom management in both fully online courses and blended courses (i.e., those that combine face-to-face and online learning). The specifications for this system include integration with the PowerSchool component of Home Base, the North Carolina Learning Objects Repository, and the identity management system developed for the State as part of the Education Cloud initiative, so it will smoothly connect with these systems. The Education Cloud LMS also will provide consistency with North Carolina Virtual Public School courses and meet the standards required for transferring courses across LMS systems. We recommend that the contract for this contemporary, cloud-hosted LMS be extended to make it available to all K-12 schools statewide. We estimate the annual cost of doing so will be about $6 million.

2. **Expand access to digital education resources, focusing first on open education resources developed in North Carolina.** The new LMS can be used to provide seamless access for teachers and students to resources already developed by State agencies (e.g., North Carolina Virtual Public School, North Carolina School of Science and Mathematics, LEARN NC at UNC-Chapel Hill, and North Carolina's public and charter schools, colleges, and universities). Updating these existing resources and making them available statewide through the new LMS will be an important step forward and a cost-effective way to leverage the prior investments in developing these materials.

   There are also open education resources developed by consortia of states and within individual states that can serve North Carolina's educators and students. In addition, purchasing or licensing some commercial resources—such as libraries of formative and benchmark assessment items—will be required to meet the needs of North Carolina schools.

   In order to ensure effective use of the funds allotted to the procurement of commercial educational materials, it is important that this spending be preceded by: (a) the implementation of the statewide LMS; (b) the development of the digital resources review and procurement processes described above; and (c) a statewide needs analysis to determine the specific resources that warrant making them available to all districts. We recommend that $10 million be allocated annually to making these resources available to all North Carolina educators and students.

3. **Begin the transition from a textbook adoption process to a digital educational resources adoption process.** To advance toward meeting the requirements of SL2013-12—which specifies that North Carolina schools primarily use digital resources that are effective for all learners by 2017—we recommend the following:

   a. **Rename PRC 130,** State Textbook Allotment, to Educational Resources Allotment, and continue the funding.

   b. **Change the adoption cycle requirements** to reflect that digital resources are frequently updated, interconnected with other resources, and may address multiple curriculum areas and grade levels bundled together; therefore, an ongoing and flexible review process needs to replace the traditional multi-year cycles for adopting curriculum for specific grade levels and content areas.

   c. **Form a working committee** that reports to the State Board of Education to develop standards for digital resources and the process for reviewing and vetting them; the work of this committee should specifically address the selection of digital content to be made

available statewide and ways to further the creation, sharing, and use of open education resources developed by North Carolina educators.

d. **Establish procedures and systems for content** to be purchased and provisioned through the purchasing consortium described in the Technology Infrastructure section (I), above.

V. REGIONAL AND STATE SUPPORT STRUCTURES

Supporting and sustaining the processes and programs recommended above, as well as future processes and programs, will require management structures and professional staff who can provide support services. Each district will require support for initiative planning, professional learning, curriculum, engineering, finance, legal (e.g., privacy and responsible use policies), and other aspects of the transition to digital learning. While some districts in the State may have the capacity to do all this on their own, many, especially small rural districts, do not. Furthermore, while some of these support requirements are best met statewide, many will best be met regionally to bring them closer to the schools and districts involved. To prepare to meet these needs, we recommend the following:

1. **Establish regional support organizations through a grant program.** The goal of this grant program is to harness the capacity to support K-12 digital learning that resides within school districts, colleges and universities, Regional Education Support Agencies (RESAs), and public and private organizations in each of the eight educational regions of the State. An opportunity to form regional partnerships with some resources for staffing is needed to establish the necessary supports throughout the State. Since this will take different forms in different places to best leverage regional assets, we recommend a competitive grant program to allow local groups to come together and propose how to best meet these needs within their own regions.

2. **Provide state-level management of centralized functions.** The General Assembly and State Board of Education should plan how the statewide purchasing, competitive grants, content selection, and other relevant functions at the state level will be managed. This can build upon existing structures within NCDPI, such as the Division of Digital Teaching and Learning, the regional instructional technology consultants, and the textbook warehouse procurement processes.

We recommend that $4 million be allocated to regional support ($0.5 million per region) and $1 million be allocated to statewide management of centralized functions annually.

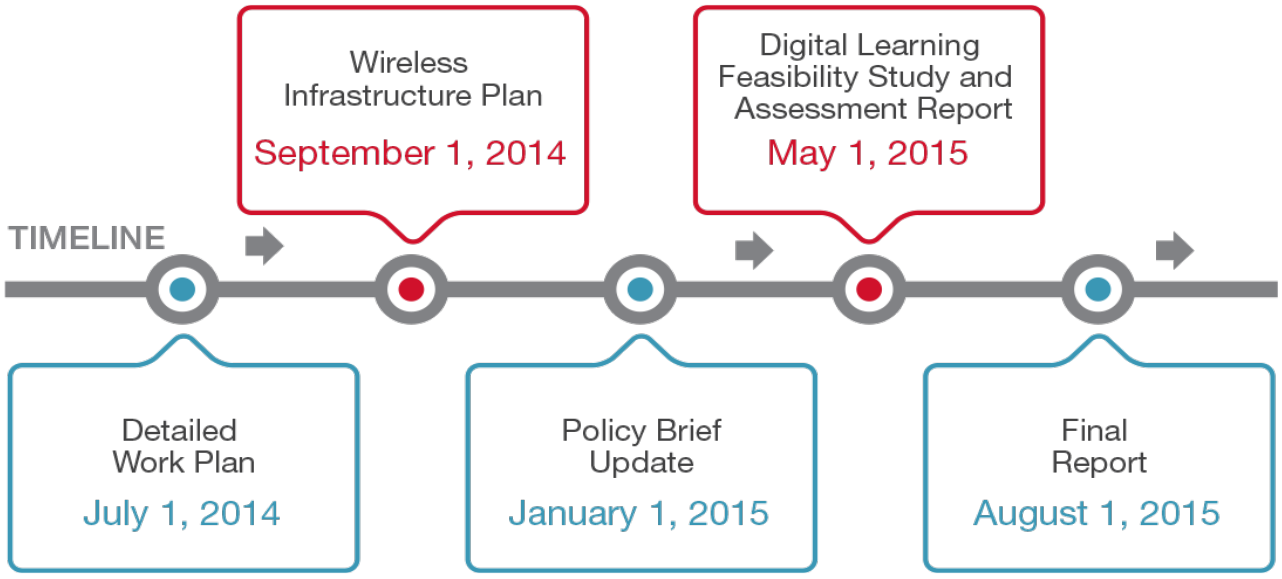
Preliminary Recommendations Summary Table

Initiative	FY2016	FY2017
I. TECHNOLOGY INFRASTRUCTURE		
Expand the School Connectivity Initiative to support internal Wi-Fi infrastructure.	$7M[8]	$12M-recurring[9]
Establish a collaborative procurement service.		
Support a multi-agency planning process for addressing broadband access in rural communities.		
II. MODEL DIGITAL LEARNING INNOVATIONS		
Establish a grant program to support the development and dissemination of innovative district digital learning models.	$24M	$24M-recurring
III. LOCAL EDUCATOR LEADERSHIP CAPACITY		
Support professional learning for educators who will lead digital learning initiatives and coach teachers.	$5M	$5M-recurring
IV. HIGH-QUALITY DIGITAL EDUCATION RESOURCES		
Continue to support Home Base while improving the curriculum and learning management components.	$6M	$6M-recurring
Provide resources to support digital learning, focusing on leveraging resources developed within North Carolina.	$10M	$10M-recurring
Begin the transition from a textbook adoption process to a digital educational resources adoption process.		
V. REGIONAL AND STATE SUPPORT STRUCTURES		
Strengthen regional support structures.	$4M	$4M-recurring
State-level management of centralized functions.	$1M	$1M-recurring
TOTAL NEW FUNDING PER FISCAL YEAR:	**$57M**	**$62M recurring**

[8] North Carolina has received approval from the U.S. Department of Education to apply $5 million of Race to the Top funding to the State's share of the Wi-Fi costs, thereby reducing the State funds required for the first year.
[9] This is in addition to the $19.9M already allotted for the School Connectivity Initiative. The annual total of $32M of State funds will leverage approximately $62M of annual investment from the FCC E-Rate program.

NEXT STEPS

The recommendations in this *Brief* are for the near term, and are intended to inform decisions that will be made early in 2015 to move North Carolina forward in its preparations to fully incorporate digital learning in all K-12 public schools. Additional recommendations and detailed implementation plans will be provided in future deliverables, as shown in the deliverables timeline below.



Completed publications and other information about the North Carolina K-12 Digital Learning Plan are available at http://ncdlplan.fi.ncsu.edu.